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EXAMINER
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TALBOT, BRIAN K

ART UNIT	PAPER NUMBER
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1762

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 09/495,141  
Filing Date: January 31, 2000  
Appellant(s): HAMPDEN-SMITH ET AL.

**MAILED**  
**APR 13 2007**  
**GROUP 1700**

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David F. Dockery  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed December 26, 2006 appealing from the Office action mailed April 24, 2006.

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**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

6,100,633	Okumura et al.	8-2000
5,921,836	Nanto et al.	7-1999
6,416,174	Ito et al.	7-2002

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 103***

Claims 12-19,24-27 and 29-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura et al. (6,100,633) in combination with Nanto et al. (5,921,836) further in combination with Ito et al. (6,416,174).

Okumura et al. (6,100,633) teaches a plasma display panel with phosphor microspheres. The device can also be a flat panel display (col. 1, lines 5-10). The phosphor particles can be of a particle size of 1-5 microns (col. 1, lines 55-60) and up to a particle size of .1-20 microns (col. 8, lines 15-20). The phosphor particles can comprise metal oxides or sulfide of the phosphor (col. 8, lines 10-15 and col. 4, lines 4-15). The phosphor particles are spherical in shape (col. 4, lines 14-55 and col. 7, lines 30-35). The phosphor paste is applied by screen printing (col. 1, line 20 and examples).

Okumura et al. (6,100,633) fails to teach applying the phosphor is a pattern by a direct write tool controllable over a x-y axis instead of by screen printing.

Nanto et al. (5,921,836) teaches an apparatus for forming fluorescent layers of a plasma display panel comprising a nozzle for ejecting the fluorescent layers which is controllable over an x-y axis (abstract and Figs 2-5). The dispenser is an automated syringe or nozzle (col. 4, lines 40-45). The fluorescent material is in the form of a paste (abstract) and applied by an automated syringe instead of conventional techniques including screen printing (col. 1, lines 5-

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35). Nanto et al. (5,921,836) teaches the fluorescent layers represented by three colors (R,G,B) can be used to form pixels (col. 3, lines 50-65).

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified Okumura et al. (6,100,633) process by applying the phosphor material with the automated syringe capable of movement in the X-Y directions as evidenced by Nanto et al. (5,921,836) with the expectation of achieving more precise control over the deposition pattern desired.

Okumura et al. (6,100,633) in combination with Nanto et al. (5,921,836) fail to teach applying the phosphor composition by a direct-write toll having a viscosity of less than 30 centipoise.

Ito et al. (6,416,174) teaches an ink composition containing a solvent, pigment (i.e. phosphor) dissolved in the solvent and a dispersant. The ink composition has a surface tension of 20-50 dynes/cm and a viscosity of 1.5-20 cp. The pigment in the ink composition is comprised of particles. The ink composition can be applied to color filters, plasma displays, etc. by an ink-jet method (col. 1 line 10 – col. 4, line 15). The advantages associated with the use of the pigmented inks include avoiding clogging of the nozzle (col. 9, lines 8-12), improved properties of the ink to avoid deterioration (col. 7, lines 20-25), uniform dispersion of particles and improved adherence to the substrate (col. 8, lines 13-23).

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified Okumura et al. (6,100,633) in combination with Nanto et al. (5,921,836) process by manipulating the phosphor composition to be applicable for ink-jet printing as evidenced by Ito et al. (6,416,174) with the advantages associated with the ink-jet

process, i.e. more precise coating, increasing production, reduce cost, etc. (Ito et al. (6,416,174) - col. 1, lines 50-60) as well as the advantages detailed above for using the ink versus a paste.

With respect to claims reciting size distribution, density and the particles being hollow, it is the Examiner's position that these factors are "result effective variables" which are optimized through routine experimentation depending upon the desired final product. It has been well settled that the mere optimizing of well known result effective variable is deemed as an obvious modification of the art absent a showing of unexpected results.

#### **(10) Response to Argument**

Appellant argued that there is no motivation to modify Okumura et al. (6,100,633) in combination with Nanto et al. (5,921,836) paste by manipulating the phosphor composition to be applicable for ink-jet printing by Ito et al. (6,416,174).

The Examiner disagrees. Ito et al. (6,416,174) teaches a wide variety of advantages associated with the use of the pigmented inks versus the conventional paste include avoiding clogging of the nozzle (col. 9, lines 8-12), improved properties of the ink to avoid deterioration (col. 7, lines 20-25), uniform dispersion of particles and improved adherence to the substrate (col. 8, lines 13-23).

Appellant argued that none of the references teach forming pixels for a flat panel display specifically as Ito et al. (6,416,174) is directed toward color filters which do not have phosphorescent layers.

The Examiner disagrees. Ito et al. (6,416,174) teaches a color filter but also teaches plasma display panels which are included in the broad definition of "flat panel displays". Secondly, Ito et al. (6,416,174) teaches similar materials to those of Okumura et al. (6,100,633) in combination with Nanto et al. (5,921,836) which include forming phosphor layers (col. 7, line 60 – col. 8, line 12). Thirdly, Nanto et al. (5,921,836) teaches the formation of pixels as noted above.

In conclusion, pointing out the differences between the reference and each individual reference is not sufficient to overcome a rejection based on a combination of the references. One cannot show non-obviousness by attacking references individually where the rejections are based on combinations of references. *In re Keller*, 208 USPQ 871 (CCPA 1981); *In re Merck & Co., Inc.*, 231 USPQ 375 (Fed. Cir. 1986). The references must be taken collectively. The test of obviousness is not express suggestion of the claimed invention in any or all references but rather what the references taken collectively would suggest to those of ordinary skill in the art presumed to be familiar with them. *In re Rosselet*, 347 F.2d 847, 146 USPQ 183 (CCPA 1965); *In re Hedges*, 783 F.2d 1038.

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In this case, one skilled in the art would be suggested to modify Okumura et al. (6,100,633) with Nanto et al. (5,921,836) to capture the advantages associated with "selective" coating in an X-Y direction. One skilled in the art would further modify the paste composition of Okumura et al. (6,100,633) with Nanto et al. (5,921,836) by manipulating the phosphor composition to be applicable for ink-jet printing as evidenced by Ito et al. (6,416,174) to capture the advantages associated with the low viscosity ink versus a highly viscous paste.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

 4/10/07

Brian K. Talbot

  
**TIMOTHY MEESKS**  
**SUPERVISORY PATENT EXAMINER**

Conferees:

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